U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Westside Lead Site
Removal Site Evaluation POLREP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV

Subject:	POLREP #1 Removal Site Evaluation Westside Lead Site 395 Elm Street, Atlanta, GA 30314
Latitude:	33.765432 ° N
Longitude:	84.408747 ° W

From:	Chuck Berry, On-Scene Coordinator
Thru:	Matt Taylor, Removal Operations Section
To:	James W. Webster, Ph.D., ERRPPB
Date:	July 23, 2019
Reporting Period:	November 8, 2018 – June 17, 2019

1. Introduction

Site Number:	C482
Response Authority:	CERCLA
Response Type:	Time-Critical
Response Lead:	EPA
Incident Category:	Removal Assessment
NPL Status:	Non-NPL

1.1 Site Description

The Westside Lead Site is an area of residential soil contamination in Atlanta's English Avenue neighborhood. Slag, an industrial waste from various metal-smelting processes, was used as fill material during property development across portions of the neighborhood. Atlanta's westside neighborhoods were developed during the first half of the 20th Century, and prior to the implementation of the Resource Conservation and Recovery Act (RCRA), there were no prohibitions against using industrial waste products as fill material.

1.2 Preliminary Removal Assessment

In 2018, an Emory University student collected data on heavy metal concentrations in Atlanta-area garden soil for a doctoral dissertation. Samples were collected at locations throughout western Atlanta and the surrounding suburban areas, focusing on community gardens.

Elevated lead levels were found at several locations in west Atlanta. This was not unexpected, as many urban areas have high lead levels due to a variety of factors, most commonly lead-based paint and historical use of leaded gasoline. Urban lead contamination is a well-researched issue, and the mere presence of elevated lead would not normally result in a Superfund investigation. However, discussions with one of the community garden groups uncovered the presence of slag on residential lots near one of the gardens in the English Avenue neighborhood. The surrounding soil was found to have lead levels greater than 4,000 milligrams per kilogram (mg/kg), 10 times the EPA Removal Management Level (RML) of 400 mg/kg. It was believed at the time that the slag was confined to a series of piles dumped on an empty lot at 395 Elm Street.

One of the student's instructors at Emory also works for the EPA Region 4 Superfund Division and facilitated reporting the findings to the EPA and the Georgia Department of Natural Resources' Environmental Protection Division (GA EPD). On November 15, 2018, GA EPD requested the EPA perform a Removal Site Evaluation (RSE) on the property.

Emory University used the Incremental Sampling Method (IMS) to collect the samples, and the analysis methods were parallel to the Region 4 X-Ray Fluorescence (XRF) Field Operation Guide (FOG). The soil was dried and sieved to less than 150 microns prior to XRF analysis. While the Emory data is considered generally reliable, it is impossible to verify sample custody, sampling locations and post-collection sample handling. Furthermore, laboratory analysis used to validate the XRF results was performed by Emory in-house and contained some discrepancies between the two analytical methods that had to later be corrected. Resultantly, the data is not considered definitive. However, it is used to guide and suggest areas for further investigation.

Slag is an industrial by-product from metal smelting. Slag can often be a useful product. It is used as aggregate in asphalt and concrete, as road bed gravel, railroad ballast and can be re-melted into rock wool. However, the elemental content of slags varies with the original ore and the smelting method used. Some contain high levels of heavy metals, making them unsuitable for post-smelter use. Prior to promulgation of the RCRA, land application of slag with high levels of heavy metals was not restricted. Emory crushed some of the slag and performed XRF analysis on the resultant dust, observing lead and arsenic levels as high as 5,464 and 464 mg/kg, respectively. The industrial source of the slag is unknown. However, there were foundries located in Atlanta going back to the late 1800s, several located near the English Avenue area. Two of the foundries have documented evidence of lead-contaminated slag on-site and required post-closure remedial actions after the facilities shut down.[1]

On October 31, 2018, the Emory data was sent to the GA EPD. On November 15, 2018, after reviewing the data, GA EPD requested the EPA investigate the Site to determine if further action was warranted. A site reconnaissance was performed in December 2018 (see Section 2.1). At that time, the On-Scene Coordinator (OSC) noted slag visible in lawns at several properties along Elm Street, along both sides of the street. Combined with the elevated lead data Emory collected from other properties along Elm Street, this indicated a potentially more widespread extent of contamination than just the soil piles at 395 Elm Street. The OSC initiated an RSE to determine if contamination on Elm Street was confined to the soil piles at 395 Elm Street or was more widespread.

1.3 Site Location

The English Avenue neighborhood is located on the west side of Atlanta and has existed since the late 1800s. The neighborhood was historically residential but directly abuts a major rail corridor through the

[1] Specifically, the Seitzinger Lead Smelter (EPD Hazardous Site Inventory No. 10138, 1994), and the Atlantic Steel facility, which was remediated under a GA EPD RCRA closure permit beginning in the late 1990s.

central city. Large numbers of industrial properties were located along the corridor, including a coal-fired power plant, an iron foundry, a municipal incinerator, a recycling center and a manufactured gas plant. By the mid-1900s most of these facilities were shutting down, and by the mid-1970s nearly all the industrial property was converted over to municipal use or abandoned.

English Avenue went through an economic downturn in the second half of the 20th Century. Known colloquially as "the Bluff", the neighborhood is today a low-income and majority-minority area. The neighborhood is considered an environmental justice community under the definition in Executive Order 12898. Neighborhood organization has recently begun to take hold, and, today, the neighborhood is beginning to revitalize both economically and socially. Notably, in 2013 the Urban Waters Federal Partnership designated Proctor Creek, which drains most of west Atlanta, as a priority location. The EPA developed an extensive network of relationships with community leaders, and the resultant workgroup, the Proctor Creek Stewardship Counsel earned a *Samuel J. Heyman Service to America Award* in 2018.

The residential portion of English Avenue is approximately 285 acres, just slightly less than half a square mile, and consists of approximately 1,400 residential properties. Most parcels are small, less than 8,000 square feet. Approximately ½ of the parcels are unimproved, empty lots without residential structures. Of the lots with standing structures, almost ¼ of those are uninhabited. The 2018 census population estimate is 2,501 persons living in the investigation area.

2.0 Removal Site Evaluation

2.1 Site Reconnaissance

On December 11, 2018, OSC Chuck Berry, of the EPA Region 4's Emergency Response, Removal, Prevention, and Preparedness Branch (ERRPPB) and the Superfund Technical Assessment and Response Team (START) contractor, OTIE, met GA EPD William Lucas and the City of Atlanta Department of Watershed Management's Cory Rayburn and Paul Moisan at the 395 Elm Street parcel. Slag was visible on and around the soil piles and on property across the street along the road edge. Based on the information provided by Emory and the visual verification of slag, the OSC elected to initiate an RSE.

2.2 RSE Sampling

The goals of the RSE, as outlined in the RSE Memorandum approved by ERRPPB Management, were to:

1. Determine if there are concentrations of lead above the EPA Region 4 RML for Residential soils of 400 parts per million in particles less than 150 micrometers (μm) in diameter in uppermost 6 inches of soil at the Site.
2. Determine if there are concentrations of arsenic above the EPA Region 4 RML for Residential soils of 68 parts per million in particles less than 150 micrometers (μm) in diameter in uppermost 6 inches of soil at the Site.
3. Determine if there are sensitive populations living in residences meeting either of the criteria in #1 and/or #2 above. This will be determined through extensive outreach, including resident interviews.
4. Determine if there are any other Site conditions that meet any of the removal criteria provided in the National Contingency Plan (NCP) at 40 CFR 300.415(b).

5. Determine if there are any correlations between soil processed according to the FOG that may allow for faster Site characterization.
6. Collect data to support the determination of the appropriateness of a National Priorities List (NPL) listing.

To define a manageable investigation area, the OSC selected the two city blocks surrounding 395 Elm Street, which encompassed 60 parcels. There were difficulties in obtaining access to the lots, as most of the property in English Avenue is owned by absentee landlords and is not owner-occupied. The EPA was successful in obtaining access to only 23 properties in the study area during the first round of sampling.

2.2.1 Sampling Methods

START developed a Quality Assurance Project Plan that incorporated the Region 4 XRF FOG and used the Incremental Sampling Method. For lots without improved structures, the entire lot was considered a single Decision Unit (DU). For properties with houses, independent front and back yard samples were collected. Additional samples for gardens, side yards and play areas were taken as necessary.

Upon collection, each sample was dried, dis-aggregated and then analyzed with an XRF to determine the bulk lead value. The sample was then sieved with an 850µ mesh to screen out most organics. The sieved fraction was then dis-aggregated again and sieved with a 250µ mesh, dis-aggregated again and sieved with a 150µ mesh. The 150µ fraction was retained for analysis. The sieved fractions were then analyzed with an XRF prior to being packaged for laboratory analysis. The samples were sent to the Region 4 laboratory in Athens, Georgia for metals analysis.

Sieving was performed to provide a more accurate assessment of the soil fractions most likely to be ingested by persons coming in physical contact with the soil.

2.2.2 Sampling Results

To better describe the extent of the threat at the Site, the data was analyzed on both a per-parcel and a per-DU basis. Additionally, the data below is derived using the laboratory analyses as definitive data. XRF data, while collected, is not used for this RSE. However, there was excellent correlation between XRF and laboratory lead results (r-squared = 0.9975) and extremely good correlation between sieved laboratory data and unsieved XRF results (r-squared = 0.9). While the XRF data is not used for this RSE, it would produce the exact same results. Future investigations may use XRF on both sieved and unsieved soil in lieu of laboratory data for definitive measurements of lead concentrations. Arsenic correlation was non-existent, and any analyses for arsenic should continue to use laboratory data as definitive data.

Laboratory arsenic values ranged from 0.77 mg/kg to 18 mg/kg. No samples exceeded the arsenic RML of 68 mg/kg. Thus, arsenic is not a contaminant of concern for this RSE.

Lead values ranged from 57 mg/kg to 3,400 mg/kg. On a per-parcel basis, 15 of the 23 parcels sampled had at least 1 DU above the EPA RML for lead of 400 mg/kg, or 65% of all parcels sampled. Three parcels showed at least 1 DU equal to or above 1,200 mg/kg. The average over-RML concentration is 830 mg/kg.

Forty-seven DUs were sampled, approximating 93,000 square feet. Of these, 22 were above the RML for lead, or 47%. The total area exceeding the lead RML over the 23 properties is approximately 52,000 square feet, or about 56% of the 93,000 square feet sampled.

2.2.3 Slag Observations

Throughout the RSE, the OSC and START contractors made notation of observed slag throughout the neighborhood to determine locations on properties likely to contain slag and if the contamination extends beyond the original 60-parcel area of investigation.

Slag was observed universally in areas where the property topography sloped down away from the roadway. Slag is found on these downslopes in decreasing abundance as one slopes away from the roadway, although soil lead levels are not necessarily as correlative based on in situ XRF analysis. Given the uniformity of this finding, this is probably related to the original method of construction for the neighborhood en masse and not a property-specific characteristic.

Similarly, on properties where slag was observed, it was generally just under a thin layer of topsoil. In places, the topsoil was completely eroded, and large pieces of slag was exposed. Slag pieces ranged from sand-sized particles to large cobbles.

Slag was observed at properties up to 1/3 of a mile distant and outside the English Avenue neighborhood. XRF lead readings at various points along the road right-of-way showed lead levels over the Region 4 RML, indicating probable lead contamination at areas outside the original 60-parcel study area. Future Site activities should plan for extension of the Site boundaries to ensure complete definition of the area of extent of the contamination.

2.3 Threat Evaluation

Lead is a hazardous substance as defined by section 101(14) of the CERCLA and RCRA characteristic definitions. CERCLA contaminants, if released from the Site, have the capability of presenting a hazard to the public. The threats come primarily from human exposure (i.e. residents) to these hazardous substances in the soil. Direct contact, ingestion and inhalation of lead contaminated soil are the primary pathways of exposure. The lead in surface soils present on-site pose the following threats to public health or welfare as listed in Section 300.415 (b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP):

Section 300.415 (b)(2)(i) ***Actual or potential exposure to nearby human populations, or the food chain from hazardous substances pollutants or contaminants;*** The EPA Region 4 Superfund Scientific Support Section (SSS) recommends a RML of 400 mg/kg for residential lead exposure scenarios. Fifteen of the 23 sampled properties contain lead levels in surface soil exceeding the EPA Residential RML. Residents, especially small children, have potential direct contact exposure to the lead, through either transference to their digestive tract via their hands or through inhalation of airborne dust.

Section 300.415 (b)(2)(iv) ***High levels of hazardous substances or pollutants or contaminants in the soils largely at or near the surface, that may migrate***; Elevated lead in surface soils may migrate through land erosion or physical movement by owners and tenants. Lead levels in the soil have been observed as high as 3,200 mg/kg. These levels are in the first 6 inches of Site soil. Further, the thin topsoil is underlain in many areas by slag. This topsoil is fully eroded in some areas, exposing slag at the surface of the property. The slag will weather and break down, distributing additional lead into the neighboring soil. For at least one property with lead levels at 3,200 mg/kg, physical disturbance by the property owner planting trees along the roadside was evident. And slag was distributed and along the surface of the ground. Residents may accelerate the distribution by unearthing slag during normal gardening practices, increasing the likelihood of direct exposure conditions addressed under Section 300.415 (b)(2)(i).

Section 300.415 (b)(2)(v) ***Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released***; Lead dust mobilized by wind may be inhaled by children and other residents. Airborne dust is also carried across property lines, so that children living on a property with low levels of lead may be exposed to lead dust emanating from a neighboring property with high levels. Atlanta's weather pattern normally includes wet and dry seasons, but those patterns are inconsistent. These periods of dryness lead to dry topsoil and excessive dust generated from children playing on exposed soil in playgrounds and lawn maintenance activities. This dust can then be inhaled directly or carried or blown into the residence. While the inhalation pathway was not quantified during this RSE, the *Superfund Lead-Contaminated Residential Sites Handbook, August 2003*, notes that it can be a significant source of total body load for lead and that remediation of external sources prior to a cleaning of the house is required to permanently remove this threat.

3.0 Recommended Action

The Removal Site Investigation has identified lead concentrations exceeding the RML for residential land use that pose a threat to human health and the environment. Based on the criteria listed above, the OSC recommends the Region 4 Emergency Response, Removal, Prevention, and Preparedness Branch consider the Site for a time-critical removal action.

CONCUR: _____ DATE: 07/24/2019
James W. Webster, Ph.D., Chief, ERRPPB

NON-CONCUR: _____ DATE: _____
James W. Webster, Ph.D., Chief, ERRPPB